

Sheet 3 (Cams)

Q1.

A cam drives a knife-edge follower in the following manner: During first 120° rotation of the cam, follower moves outwards through a distance of 20 mm with SHM. The follower dwells during next 30° of cam rotation. During next 120° of cam rotation, the follower moves inwards with SHM. The follower dwells for the next 90° of cam rotation. The minimum radius of the cam is 25 mm. Draw the profile of the cam.

Q2.

Draw the cam profile for following conditions:

Follower type = Knife edged,

- I. in-line; lift = 50mm; base circle radius = 50mm; out stroke with SHM, for 600 cam rotation; dwell for 450 cam rotation; return stroke with SHM, for 900 cam rotation; dwell for the remaining period
- II. offset 20 mm; lift = 50mm; base circle radius = 50mm; out stroke with SHM, for 600 cam rotation; dwell for 450 cam rotation; return stroke with SHM, for 900 cam rotation; dwell for the remaining period

Q4.

A cam drives a roller reciprocating follower with 30 mm diameter in the following manner:

- During first 180° rotation of the cam, follower moves outwards through a distance of 25 mm with simple harmonic motion.
- The follower dwells during next 60° of cam rotation.
- During next 90° of cam rotation, the follower moves inwards with simple harmonic motion.
- The follower dwells for the next 30° of cam rotation.

The minimum radius of the cam is 30 mm. Draw the profile of the cam.

Q3.

Draw the cam profile for following conditions:

Follower type = roller with 20 mm radius,

- I. in-line ; lift = 50 mm; base circle radius = 50 mm; out stroke with SHM, for 60° cam rotation; dwell for 45° cam rotation; return stroke with SHM, for 90° cam rotation; dwell for the remaining period
- II. offset 20 mm; lift = 50 mm; base circle radius = 50 mm; out stroke with SHM, for 60° cam rotation; dwell for 45° cam rotation; return stroke with SHM, for 90° cam rotation; dwell for the remaining period